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EMOTIONAL INTELLIGENCE
AS PERFORMANCE OR SELF-REPORT

Lennart Sjöberg
Center for Risk Research
Stockholm School of Economics
Sweden

Elisabeth Engelberg
Center for Risk Research
Stockholm School of Economics
Sweden

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MEASURING AND VALIDATING EMOTIONAL INTELLIGENCE AS PERFORMANCE OR SELF-REPORT¹

Lennart Sjöberg
Center for Risk Research
Stockholm School of Economics
Sweden

Elisabeth Engelberg
Department of Economic Psychology
Stockholm School of Economics
Sweden

Abstract

This is a study of emotional intelligence (EI). EI was measured by performance and self-report tasks. Data were also obtained on basic values, some standard personality dimensions such as those specified in the five-factor model, social adjustment and several scales of impression management. Criteria were loneliness, work-family life balance and Internet addiction, and also measures of emotional and value deviance. Participants were college students in a business education program who participated anonymously in the extensive test session, which took about six hours to complete. It was found that EI measures - both self-report and performance - intercorrelated as expected, and that EI was strongly related as expected to criteria. People high in EI reported less loneliness, less Internet addiction and better work/studies - leisure/family balance. Impression management was more strongly related to self-report data than to performance. Self-report data were to a large extent accounted for by measures of personality according to the five-factor model, but performance measures were not. Finally, the extent of faking was measured and controlled for.

Key words: emotional intelligence, personality, five-factor model, and impression management

Emotional intelligence (EI) has rapidly become a popular concept (Sjöberg, 2001a, 2001b, 2001c), especially following successful books by Goleman (Goleman, 1995, 1998). Researchers and practitioners, such as Bar-On, market self-report instruments that purportedly measure EI (Bar-On, 2000) but little published research supports this claim. Claims to the effect that emotional intelligence is much more important than traditional intelligence have not been supported; on the contrary traditional intelligence remains a major dimension in the prediction of work achievement (Austin et al., 2002; Schmidt & Hunter, 1998). This does not preclude that EI could add an important piece of information. McCrae argued that self-report EI has not been established as distinguished from the dimensions of the five-factor model (McCrae, 2000). In spite of such critical remarks, EI flourishes in the

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test market and is probably seen as the biggest innovation of personality measurement of the 1990's.

There are obvious reasons why the introduction of EI has raised great hopes. Most people have probably experienced, in their own lives, the severe problems that may arise in human interactions of various kinds. Manipulation and deception constitute one example of the “dark side” of human transactions, other common problems have more to do with the sheer lack of understanding of how others feel and react. It is a common mistake to assume that others’ opinions and attitudes are more like one’s own than they, in fact, are (Baumeister, 1998). Managers often face grave difficulties having their roots in lack of social skills. (REF). Policy making in society runs into severe difficulties when people’s concerns and worries are overlooked. EI therefore has potential relevance both for clinical diagnosis and industrial selection, and also for training. But hope is one thing, actual operational measurement of the construct another.

The original impetus for EI is found in work by Salovey, Mayer, and DiPaolo, published in 1990 (Mayer, DiPaolo, & Salovey, 1990; Salovey & Mayer, 1989-1990). They suggested the term and devised a number of ways of measuring it, but not in a traditional self-report format, but in terms of performance. For example, respondents were shown photographs of faces intended to express various emotions. Their task was then to judge, on a set of scales, which emotions were expressed by each face. These judgments were then scored for the number of “correct” answers where assessment of correctness could be based on various approaches. The most common way of establishing correctness has been consensus scoring, i. e. the most common response is taken to define the correct response. Another way is to use expert judgments to define the correct response. A variation of that approach is used in the present study, and compared to consensus scoring.

The scale devised by Salovey and colleagues (Salovey, Mayer, Caruso, & Lopez, in press), called MSCEIT, has been criticized for low reliability (Davies, Stankov, & Roberts, 1998) but it has later been revised and now is claimed to have satisfactory reliability (Mayer, Salovey, Caruso, & Sitarenios, 2003). Validation of the theory of emotional intelligence has so far been reported by relatively few authors, see the book by Matthews, Zeidner and Roberts for a review (Matthews, Zeidner, & Roberts, 2002). A number of different approaches were also reviewed in a handbook on emotional intelligence (Bar-On & Parker, 2000). The correlates of emotional intelligence should occur both in social dimensions, such as empathy (Schutte et al., 1998) and aspects of emotion proper, such as affective intensity (Engelberg, 2001). We also expect that values are related to EI. Our previous results suggest that people high in EI are less materialistic than others (Engelberg, 2001; Sjöberg, 2001a) and less inclined towards adopting a cynical and manipulative attitude (Sjöberg, 2001c).

Some of the postulated correlates of EI may be regarded as facets of the concept *per se*. We mention alexithymia (negative), empathy (positive), self actualization (positive) and Machiavellianism (negative). Alexithymia is a clinical term denoting lack of ability to name and identify emotions (Taylor, 2000; Weinryb, Gustavsson, Åsberg, & Rössel, 1992). EI is, on the other hand, intended as a dimension of relevance for understanding variation in non-clinical populations. Notwithstanding, alexithymia is of interest in a validation study of EI measures. Empathy (Hogan, 1969; Mehrabian & Epstein, 1970) has long been of interest in social psychology and should clearly be related to EI, as far as EI can be considered to

measure social intelligence as well as emotional processes in the more proper sense of the word. Social intelligence has been notoriously hard to measure (Kihlstrom & Cantor, 2000) but current interest in EI may contribute to a long overdue revival of this field. Self-actualization is a central construct in humanistic psychology (Jones & Crandall, 1986; Maslow, 1954) and relates in a straightforward manner to the core of the concept of EI. Machiavellianism, reflecting a cynical and manipulative attitude to one's fellow human beings, may be a way to pursue one's interests but is self-defeating, sooner or later, and contrary to what EI stands for (Bar-On & Parker, 2000).

It is likely that the implications of EI of most interest are social in nature (Schutte et al., 2001). In industrial psychology, EI is being used both for selection and training, presumably because of such social implications. People high in EI are expected to perform better in any job having social demands, and almost all jobs do, more or less, see e.g. Slaski and Cartwright (Slaski & Cartwright, 2002). People who adjust well to the social environment, at work or at home, are also expected to function better in their professional roles (Carlson, Kacmar, & Williams, 2000). In the present study, we included measures of social adjustment as criteria for the EI measures used. The dimensions we measure are loneliness, life balance between work and leisure/family and Internet addiction. To measure loneliness, the UCLA loneliness scale (Russell, 1996) was used. The Internet addiction scale (Young, 1998; Young & Rogers, 1998) was also employed, as well as a work-family balance scale (Sjöberg, 2001a), as described in more detail in a later section.

Social and emotional competence and adjustment are concepts, which are related in intricate and subtle manners. A person who reacts emotionally in a different way than most others is likely to run into social problems, sooner or later. Also, a person who reacts differently from what others expect people to do is in a potential social problem situation. He or she would be less predictable than others, which could be socially risky. We develop and apply measures of emotional deviance and unpredictability in the present study.

Values are often believed to be an important source of variation among individuals, yet that assertion has been hard to support (Sjöberg, 1998). As mentioned above, however, we have found a negative relationship between materialistic values (stressing monetary achievement in life) and EI. In the present study, we wanted to explore the issue further by means of using the broad value scale constructed and extensively used by Schwartz (Schwartz, 1992), with the aim of relating Schwartz dimensions to EI scores. In addition, having idiosyncratic values may carry with it a social risk, and would hence be indicative of less successful social adjustment. Value deviance was measured by relating each individual's value to the corresponding mean in the group.

The Five-Factor model of personality (McCrae & Costa, 1987) enjoys widespread credibility at the present time. It is important to investigate if new concepts, such as EI, really contribute anything beyond the established five factors of agreeableness, extraversion, emotional stability, intellectual openness and conscientiousness. If EI has the wider social connotations frequently claimed for it, it should be related to agreeableness which is a personality facet loaded on social skill and adjustment. A discriminating EI scale should, however, not be correlated with the other four personality dimensions. In addition, EI measures should be uncorrelated with impression management tendencies of the test-takers. Impression management is ever present in all important assessment situations, and possibly even in

situations where there are no clear consequences to the test-takers of the test results.

Summing up, the purposes of the present study was to answer the following questions:

- Do self-report and performance measures converge on a common dimension of EI?
- Do EI measures correlate with other, conceptually related, dimensions such as alexithymia?
- What are the wider implications of EI in terms of life adjustment of EI?
- Is there a relationship between idiosyncrasies of emotional reactions and values and EI?
- Is there a relationship between basic values and EI?
- Does EI, measured as self-report or performance, measure anything beyond the basic dimensions of the five-factor model?
- What are the effects of impression management on EI measures? Can they be controlled for statistically?

As a general strategy, we have devised tasks of our own for measuring performance. These are not part of an established test such as MSCEIT but should measure the same EI concept, if indeed such a concept has empirical substance. The self-report scale due to Schutte et al. (Schutte et al., 1998) was used to measure self-report EI. This is probably the best-known self-report scale available in the scientific literature. Bar-On's more extensive self-report EI test seems not to be available for research purposes without extensive fees, which our budget did not allow for.

As an additional purpose, we also intended to study in detail the problems of deception and faking. Our basic interest in this respect was to study to what extent the variables were sensitive to faking in a high-stakes, real testing situation. We also wished to investigate how well we could correct for such tactical behavior by means of a new way of measuring faking developed here, and then used for statistical control of faking. The validity of the procedure is investigated by comparing a group tested anonymously with one tested under high-stakes motivation to achieve well on the test.

Method

Participants and test situations

Forty-one participants were recruited among students at the Stockholm School of Economics. They were on the average 21.1 years old (range 18-28) and 19 were women, 21 men. One participant did not state gender. All testing was anonymous, a fact stressed to the subjects. Testing was done in one session, with all participants present at the same time. The test-takers were paid SEK 400 for participation (at that time about US \$ 40).

One hundred and ninety participants had taken the same tests (with some exceptions) about 11 months before, as part of a process for assessing applicants to the Stockholm School of Economics. They had been invited to take part in the test, on the basis of, mainly, high school grades or a test of intellectual ability. Since admission to the School is highly competitive and very desirable for many of these applicants, it was expected that they did what they could to be admitted. Even if instructions stressed that they should give honest and frank answers to

self-report items, it was not really expected that they would be entirely open and frank. Of course, it was expected that there would be variability in the extent of impression management, and much care went into measuring that dimension, as explained in a subsequent section.

The group of 190 applicants consisted of 102 men and 88 women, average age 20.5 years (range 18-34). They were comparable to those who had been admitted to the school, only slightly lower in grades or results on tests of intellectual ability. The latter circumstance caused no concern about lack of comparability because the kinds of test studied do not correlate strongly, if at all, with academic intelligence in the traditional sense of the word.

Procedure

The participants went through the various tasks in the following order:

- Mood ratings
- Identifying emotions in facial expressions
- UCLA Loneliness scale
- Work-family balance scale
- Identifying emotions in social episodes
- Internet addiction scale
- Schwartz's value scale
- Main personality questionnaire

The instructions emphasized the importance of frank and honest answers. In the end of the main personality questionnaires, some items were given under the instruction to give faked answers that would be likely to contribute to a positive admission decision regarding the test-taker. The design of these items is explained in a subsequent section. The total test battery took about 6 hours of testing time, i.e. a full day of testing. Details follow in the next section.

Results

Preliminaries: Test and index development

The tests described here were designed and selected so as to measure EI and some related dimensions. Not all can be counted as EI dimensions proper, but they were of both practical and theoretical interest in the present context and they provided a context for the attempt to isolate the EI dimension.

Measurement of emotional intelligence and related concepts. Some items had been translated from the literature, among them the EI scale proposed by Schutte et al. (Schutte et al., 1998). Reliabilities were estimated by means of Cronbach's alpha (Cronbach, 1951). The Schutte et al. scale (present $\alpha=0.89^2$) measures alexithymia

². Present alpha values are based on the testing of the anonymous test-takers as reported in the present article, in many cases using translated scales. The corresponding values in the larger, high-stakes, group are available in a separate publication (Sjöberg, 2001b), and were quite similar to the values reported here. Small SD's may account for some of the fairly low reliability coefficients noted

(ability to identify and describe feelings, as well as a tendency to shun away from emotional dimensions in thought and social relations), attention to feelings, clarity of feelings, mood repair, optimism and impulse control. The alexithymia scale of Bagby, Parker & Taylor (Bagby, Parker, & Taylor, 1994) was also employed (present alpha=0.81). The empathy (Hogan, 1969) scale of Mehrabian and Epstein (Mehrabian & Epstein, 1970) was used (present alpha=0.75), as well as the Jones and Crandall scale of self-actualisation (Jones & Crandall, 1986) (present alpha=0.68). Nineteen of the items of the Christie scale of Machiavellianism (Christie & Geis, 1970), and 11 additional items written for the present study, were used (present alpha including the new items=0.82).

Performance measures of EI. We used a performance dimension measuring knowledge about other people's current and habitual mood, here termed emotion knowledge. This is a measure not included in the MSCEIT scale devised by Mayer, Salovey and Caruso (Mayer, Salovey, & Caruso, 2000) who studied other aspects of knowledge about emotions. To measure it, we used a mood scale consisting of 71 items, measuring six factors (Sjöberg, Svensson, & Persson, 1979). The six factors were happiness, tension, fatigue, confidence, extraversion and social orientation. The participants were instructed to rate their own current mood at the start of the test session, and then their habitual mood. After that, they were asked to rate the current and habitual mood of the other test-takers. The mean ratings of current and habitual mood were used as criteria. Factor scores were computed and the absolute differences between actual means of current and habitual mood on the one hand, beliefs about these dimensions on the other, were computed for each participant and each factor. The alphas (computed across the six factors) were 0.59 and 0.84 for current and habitual mood, respectively. This is a type of "expert scoring" since the true values were estimated and used as criteria (means of mood ratings). Consensus scoring was also carried out, using the mean guessed values as criteria. The alphas for current and habitual mood in this case were 0.63 and 0.78, respectively. Intercorrelations of the four scores are given in Table 1.

here. It should also be noted that a four-category response scale (see text) was used throughout, which in some cases was a divergence from the procedures of the original scales.

Table 1. Correlations among measures of emotional knowledge (mood scores).				
	Consensus, current mood	Consensus, habitual mood	“Expert” criterion, current mood	“Expert” criterion, habitual mood
Consensus, current mood	1.00	0.46**	0.16	0.23
Consensus, habitual mood	0.46**	1.00	0.29	0.44**
“Expert” criterion, current mood	0.16	0.29	1.00	0.46**
“Expert” criterion, habitual mood	0.23	0.44**	0.46**	1.00

For further analyses, the four mood scores were combined to two measures: consensus and “expert”. Mood rating data were also used for scoring deviant emotional reactions, see a following subsection.

In a second phase of the test session, participants made ratings of social interaction episodes described in the questionnaire, and of facial expressions³. These tasks were designed to measure ability to identify emotions, this being the major aspect of EI according to Ciarrochi et al. (Ciarrochi, Chan, & Caputi, 2000), and also the easiest ones to measure. The "correct" answer in each case was the most common one given in the present group. In a few cases two response alternatives were equally often chosen, and most popular, and then they were both used as definitions of correctness.

In the first part of the section on emotion identification, 12 pictures from the Lightfoot series of facial expressions (Engen, Levy, & Schlosberg, 1957) were displayed, and the participants rated them on eight unipolar three-category scales:

- ! Happiness
- ! Anger
- ! Sadness
- ! Shame
- ! Guilt
- ! Contempt
- ! Surprise
- ! Fear

Ten social episodes, each involving two key actors, were then described. The participants were asked to rate, on unipolar three category scales, to what extent each of the two actors felt, at the conclusion of the episode:

³ . Details of episodes and facial expressions are found at the following web site: <http://www.dynam-it.com/institute/>

- ! Happy
- ! Angry
- ! Sad
- ! Ashamed
- ! Proud
- ! Afraid
- ! Relieved
- ! Disappointed
- ! Surprised
- ! Guilty

The alpha values were, for episodes and facial expressions, 0.85 and 0.77, respectively.

Intercorrelations among the EI performance scores and the Schutte et al. self-report scale are given in Table 2.

Table 2. Intercorrelations of EI measures.					
	Facial expressions	Social episodes	Emotional knowledge consensus criterion	Emotional knowledge “expert” criterion	Schutte et al. EI scale
Facial expressions	1.00	0.78**	-0.19	-0.32*	0.28
Social episodes	0.78**	1.00	-0.28	-0.35*	0.23
Emotional knowledge consensus criterion	-0.19	-0.28	1.00	0.86**	0.18
Emotional knowledge “expert” criterion	-0.32*	-0.35*	0.86**	1.00	0.10
Schutte et al. EI scale	0.28	0.23	0.18	0.10	1.00

The table shows that there was a very high correlation between the two measures based on performance (facial expressions and social episodes), and also convergence with the mood measures⁴, although weaker. The Schutte scale did correlate with the performance measures in the expected direction, but not significantly at the 0.05 level. Lack of convergence is therefore noted mostly with the self-report scale⁵. It is also interesting to note that the consensus scoring of emotional knowledge resulted in a measure with less convergent validity than the scoring based on actual means, here called “expert” scoring. Consensus and “expert” scoring of mood correlated very strongly⁶.

Emotional idiosyncrasies. Emotional idiosyncrasies were measured with mood rating data as a basis. The scores of the six basic dimensions (see above) were related to means of all subjects, current and habitual mood. The absolute values of the deviations from the means were computed and averaged across the six dimensions to get a measure of deviant mood. The procedure was repeated for habitual mood. The reliabilities of these two scores were 0.59 and 0.84, respectively.

An analogous scoring was performed with the use of mean guessed moods rather than actual moods. In that way, we measured to what extent the subjects’ reported actual and habitual moods conformed to the moods expected by the group of subjects. It can be noted that this is a dimension different from deviant moods *per se*. The reliabilities for current and habitual mood, using this type of scoring, were 0.53 and 0.70, respectively. Intercorrelations among the four measures of emotional idiosyncrasies are given in Table 3.

Table 3. Intercorrelations of measures of deviant and unpredictable mood.				
	Deviant mood, current	Deviant mood, habitual	Unpredictable mood, current	Unpredictable mood, habitual
Deviant mood, current	1.00	0.46**	0.88**	0.41**
Deviant mood, habitual	0.46**	1.00	0.40*	0.93**
Unpredictable mood, current	0.88**	0.40*	1.00	0.39*
Unpredictable mood, habitual	0.41**	0.93**	0.39*	1.00

The scores for deviant moods and unpredictable moods were strongly correlated, as might

⁴. Note that the scores on emotion knowledge are inverse measures of performance: the larger the deviations, the worse the performance.

⁵. In the larger, high-stakes group the pattern of correlations among EI measures was similar, but episodes and facial expressions correlated somewhat weaker, $r = 0.44$, and emotion knowledge had a clearer, relationship to the Schutte et al. scale, see Sjöberg (Sjöberg, 2001b).

⁶. The larger, high-stakes, group was only scored for the “expert” criterion.

have been expected. For further analysis we computed one combined index for deviant moods, current and habitual mood combined, and one for unpredictable mood.

Psychometric properties of other scales of social adjustment and personality. Several other scales were used; reliabilities will be reported here. To measure loneliness, the UCLA loneliness scale (Russell, 1996) was used. Its alpha value here was 0.85, 21 items. The work-family balance scale (Sjöberg, 2001a) returned an alpha value of 0.90 with 20 items. The Internet addiction scale (Young, 1998; Young & Rogers, 1998) was used. Seven items had to be deleted because they gave no variation among test-takers; the scale still had a very good alpha value of 0.95. A Big Five questionnaire (Wiggins & Trapnell, 1997) was also used, having 14-20 balanced items in each factor⁷. The alpha values were between 0.73 and 0.83.

The three scales of social adjustment formed a reasonably tight cluster. Loneliness correlated -0.39 with balance and 0.33 with Internet addiction, respectively. Balance and Internet addiction correlation -0.45. All these correlations were statistically significant at least at the 0.05 level.

Values. The Schwartz value scale contains 56 items. There was only one item explicitly concerned with materialism, an item measuring the value of being very wealthy, and that aspect will therefore not be further covered here⁸. The factor structure of the scale seemed somewhat unstable in our previous work; we therefore decided to perform a component analysis on these items in spite of the small sample. Four components appeared, and were measures as follows:

- Freedom and achievement (15 items, alpha = 0.84)
- Tradition, hierarchy (6 items, alpha = 0.74)
- Equality, justice (10 items, alpha = 0.82)
- Stimulation, excitement (8 items, alpha = 0.72)

Indices measuring these values were computed. We also calculated the absolute deviations from the means in these value dimensions, and formed an index of value deviance by taking their average.

Response styles. To measure response style and self-presentation bias, the Crowne-Marlowe measure of social desirability (Crowne & Marlowe, 1960) was employed (present alpha=0.84). More recently developed scales by Paulhus (Paulhus, Bruce, & Trapnell, 1995; Paulhus & Reid, 1991) were also included, intended to measure impression management (19 items, alpha=0.77) and self deception (19 items, alpha=0.54). Both impression management and self-deception were treated here as response style variables. The three response styles scales were strongly intercorrelated, see Table 4.

⁷. Due to a technical mishap one item was missed and one was deleted for other reasons. The response scale used four categories, not five as in the standard version. A few items were slightly rephrased.

⁸. Analyses made on that single item gave no clear results.

Table 4. Intercorrelations of the impression management and self-deception scales.			
	Crowne-Marlowe social desirability scale	Paulhus impression management scale	Paulhus self deception scale
Crown-Marlowe social desirability scale	1.00	0.72**	0.49**
Paulhus impression management scale	0.72**	1.00	0.30
Paulhus self deception scale	0.49**	0.30	1.00

Critics of the social desirability and impression management scales argue that these may well measure some real factor such as adjustment (McCrae & Costa, 1983; Robinson, 1973). However, in our view, the items do measure a not very sophisticated tendency in impression management; it is unlikely that those who endorse such items tell the truth because people simply are not *that* well adjusted. Or they may in fact see themselves in such a light and that would not seem to be a sign of good adjustment but the opposite. It is interesting to note that the Self Deception subscale was somewhat distinguished from the two impression management scales. It should also be noted that the high alpha values obtained here were in spite of instructions that all test results were to be wholly anonymous⁹.

A different approach to measuring faking tendencies was also employed, suggested in an earlier paper (Sjöberg, 2001b). The difference scores between faking and non-faking were computed for the four scales impulsivity, manifest anxiety, sensation seeking and self-esteem. These were the scales for which instruction had been given to fake the responses in the last part of the questionnaire. Intercorrelations among the difference scores are given in Table 10. Two of the scores were reversed¹⁰.

⁹. Some respondents may not have believed that, we noted for example above that one did not even state her gender (we know she was a woman, since only one respondent behaved this way). It is also possible that even anonymous responses are somehow regarded as an exposure of one's personality to some "unknown other" and that tactics of response may therefore have been evoked.

¹⁰. The amount of faking should be an inverse function of the difference between faked and non-faked responses: the closer they are, the more faking also under instructions to answer honestly. However, the directions of scoring needed to be adjusted because two variables were regarded as positive (self esteem and sensation seeking) and two as negative (manifest anxiety and impulsivity).

Table 5. Intercorrelations of faking scores.				
	Self esteem	Sensation seeking	Impulsivity (reversed)	Manifest anxiety (reversed)
Self esteem	1.00	0.32**	0.35**	0.43**
Sensation seeking	0.32**	1.00	0.25**	0.21**
Impulsivity (reversed)	0.35**	0.25**	1.00	0.37**
Manifest anxiety (reversed)	0.43**	0.21**	0.37**	1.00

The differences were combined to form a measure of faking with the rationale that a small difference between a value under explicit instructions to fake, and one under instructions to give truthful answers, implies a high level of faking in the “truthful” answers.

EI and related constructs

Table 6 shows the correlations between EI measures and scales intended to measure facets of emotional intelligence, i.e. alexithymia, empathy, self-actualization and Machiavellianism, values and idiosyncratic emotional and value reactions.

Table 6. Intercorrelations of EI scales, facets of emotional intelligence, values, and idiosyncratic emotional and value reactions.

	Facial expressions	Social episodes	Emotional knowledge consensus scoring	Emotional knowledge “expert” scoring	Schutte’s et al.’s EQ scale
Alexithymia	-0.32*	-0.14	-0.03	-0.08	-0.64**
Self Actualization	0.40*	0.33*	0.17	0.16	0.56**
Machiavellianism	-0.17	-0.19	-0.23	-0.21	-0.41**
Empathy	0.20	0.22	0.02	0.10	0.45**
Freedom, achievement	0.48**	0.40**	-0.02	-0.11	0.32*
Tradition, hierarchy	-0.16	-0.11	-0.14	-0.03	-0.03
Equality, justice	0.26	0.33*	-0.08	-0.08	0.27
Stimulation, excitement	0.20	-0.04	-0.11	-0.13	-0.02
Mood deviance	-0.51**	-0.58**	0.39*	0.36*	-0.29
Mood unpredictability	-0.42**	-0.48**	0.40**	0.30	-0.10
Value deviance	-0.35*	-0.33*	0.13	0.04	-0.22

It is notable that the self-report measure had stronger correlations with the four facet scales than performance measures. On the other hand, the performance measures had strong correlations with deviant and unpredictable moods, and with value deviance. There were also some significant correlations between performance measures and self-actualization and alexithymia. The latter was to be expected, due to the difficulties of alexithymics to label emotions (Pandey, 1997).

With regard to values, it was interesting to note that two of the value dimensions showed a relationship to EI: equality and justice, and freedom and achievement. The two dimensions having no relationship to EI were Hierarchy and Excitement. This result can be related to the finding here, and in our previous work, that EI is negatively related to Machiavellianism. Machiavellianism was strongly and negatively related in the present data to the value dimension Equality and Justice; $r = -0.46$. Correlations between EI and social adjustment criteria, mood and value deviance, are given in Table 7.

Table 7. Intercorrelations of EI scales, idiosyncratic emotional reactions, and measures of social adjustment.

	Facial expressions	Social episodes	Emotional knowledge consensus scoring	Emotional knowledge "expert" scoring	Schutte's et al.'s EQ scale	Mood deviance	Mood unpredictability	Value deviance
Balance work-family	0.48**	0.42**	-0.21	-0.23	0.35*	-0.44**	-0.32*	-0.24
UCLA loneliness scale	-0.32*	-0.28	-0.02	-0.08	-0.55**	0.24	0.02	0.28
Internet addiction scale	-0.44**	-0.38*	0.04	0.04	-0.16	0.17	0.11	0.65**

Social adjustment was consistently and strongly related to emotional intelligence, especially the performance measures. Social adjustment has previously been related to the perception of facial emotions (Niedenthal, Brauer, Robin, & Innes-Ker, 2002). It was also interesting that idiosyncrasies of emotional reactions, and of values, were negatively related to some aspects of social adjustment. The Schutte et al. scale also performed reasonably well, while measures of emotional knowledge were unrelated to social adjustment.

Impression management and faking

It has been found that the performance measures correlated somewhat higher with the criteria than the Schutte et al. scale, with the exception of the mood scales. However, this could be due to a common factor of impression management. The multiple correlations between EI measures and the three impression management scales are given in Table 8.

Table 8. Multiple correlations between EI variables and impression management/faking (Crowne-Marlowe, two Paulhus scales and faking scale).		
	R^2_{adj}	
EI variable	High-stakes group	Anonymous group
Facial expressions	0.000	0.078
Social episodes	0.000	0.044
Emotional knowledge “expert” scoring	0.005	0.000
Schutte et al.	0.312	0.211

The expected pattern occurred. Only the self-report scale was sensitive to impression management and faking. The results suggest that self-deception/impression management may have been the cause of some of the correlations between the Schutte scale and other scales. The partial correlations, controlling for the three response style scales, were, however, essentially unchanged.

A final analysis was to check if the EI measures were merely a new way of expressing the variance accounted for by the Five-Factor Model. Simple and multiple correlations were computed between each of the four EI measures and the five factor scores (extraversion, agreeableness, conscientiousness, emotional stability and intellectual openness), see Table 9 for results:

Table 9. Intercorrelations of EI scales and five-factor model scales.					
	Facial expressions	Social episodes	Emotional knowledge consensus scoring	Emotional knowledge “expert” scoring	Schutte’s et al.’s EQ scale
Agreeableness	0.43**	0.42**	0.12	-0.01	0.32*
Conscientiousness	0.15	0.28	-0.03	-0.05	0.33*
Emotional stability	0.21	0.11	0.18	0.15	0.53**
Intellectual openness	0.13	0.06	0.32*	0.17	0.59**
Extraversion-introversion	-0.08	-0.02	-0.29	-0.22	-0.70**
R^2_{adj}	0.088	0.119	0.028	0.159	0.551

It is thus seen that the self-report measure, while functioning well according to several criteria used here, is largely a replication of Five-Factor standard personality variance. At the same time, the performance measures were little related to four of the five factors in the five-factor model, somewhat unexpected with regard to recent work on the ability to recognize emotions in facial expressions (Matsumoto et al., 2000).

Gender differences should be mentioned, since they usually favor the females when it comes to EI. This was true also in the present study (except for emotion knowledge) but the differences were small and not significant.

Special analysis of faking in high-stakes testing

Did the respondents of the testing sessions, which had real consequences (called Real Testing in the following) differ from those who tested anonymously? We first investigate the four response bias variables, see Table 10.

Table 10. Response bias scores in two groups, all measures standardized to mean=0 and SD=1 in the combined group.

Response bias variable	Mean, Real Testing	Mean, Anonymous Testing	t	df	p
Crowne-Marlowe social desirability	0.20	-0.93	7.29	229	<0.0005
Paulhus Impression Management	0.15	-0.70	5.23	229	<0.0005
Paulhus Self deception	0.15	-0.68	5.04	229	<0.0005
Combined faking score based on instructions to fake	-0.29	1.32	11.83	229	<0.0005

These results are encouraging because they show that the response bias variables all worked as expected. Note that the last variable, the faking score, should be related in the opposite direction from the other three scores. It was, in fact, the most sensitive one, but they were all very sensitive, giving very large differences indeed.

The next question is to what extent the various EI measures and other variables were affected by tactical answering; see Table 11 for performance measures and Table 12 for self-report measures. Table 12 also contains the results of adjusting the differences for impression management and faking.

Table 11. Test scores in two groups, all measures standardized to mean=0 and SD=1 in the combined group. Performance scales.					
Test variable	Mean, Real testing	Mean, Anonymous testing	<i>t</i>	df	<i>p</i>
Facial expressions	-0.01	0.04	ns		
Social episodes	-0.19	0.87	6.69	227	<0.0005
Emotional knowledge “expert” scoring	-0.02	0.11	ns		

Table 12. Test scores in two groups, all measures standardized to mean=0 and SD=1 in the combined group. Self report scales.							
Test variable	Mean, Real testing	Mean, Anonymous testing	<i>t</i>	df	<i>p</i>	Adjusted difference ¹	<i>t</i> of adjusted difference
Schutte et al. EQ	0.16	-0.73	5.43	229	<0.0005	0.02	ns
Alexithymia	-0.17	0.80	6.09	229	<0.0005	0.07	ns
Self actualization	0.18	-0.82	6.32	229	<0.0005	-0.05	ns
Machiavellianism	-0.14	0.67	4.96	229	<0.0005	0.12	ns
Empathy	0.00	-0.02			ns	0.07	ns
Big 5: Agreeableness	0.13	-0.62	4.55	229	<0.0005	-0.17	ns
Big 5: Emotional stability	0.19	-0.86	6.65	229	<0.0005	-0.03	ns
Big 5: Extraversion-introversion	0.15	-0.71	5.30	229	<0.0005	0.13	ns
Big 5: Intellectual openness	0.21	-0.99	7.90	229	<0.0005	-0.18	ns
Big 5: Conscientiousness	0.18	-0.82	6.24	229	<0.0005	-0.47	2.78**

Note 1. Difference between mean residuals when the four impression managements and faking variables have been controlled for by linear regressions.

Note first, in Table 11, that the test-takers in the high-stakes situation did not differ significantly from the anonymous subjects in 2 of the 3 performance measures. In the third, social episodes, they did significantly *worse* than the anonymous test-takers¹¹. Hence, there is no indication in these data that the performance measures were being faked.

¹¹. The two tests were not wholly comparable in this dimension, because 20 episodes were used in the high-stakes situation, only 10 of them in the anonymous condition. The scores were based on the same subset of 10 episodes in both cases, however. The reason for the anomalous result that test-takers in the real testing situation did worse may be that they answered in a more speculative manner, in a search for “smart solutions” to the test questions.

Turning now to Table 12, the picture is very different. The results suggest that the respondents in the high-stakes situation faked a positive image of themselves, because the comparable group, which worked under anonymity, gave a much less rosy picture of themselves. All these differences, with the exception of Empathy, are truly very large. This is a result, which agrees well with the fact that the two groups also differed - even more strongly - on measures of impression management, faking and self-deception¹².

In all cases, with one exception, statistical control for impression management and faking removed virtual all of the difference between the two groups. In other words, statistical control was sufficiently strong to remove the motivational effects of the high-stakes testing situation. The remaining case where this was not true was the measure of conscientiousness. However, even in that case about half of the effect of the high-stakes situation as compared to the anonymous situation was removed. The reason for the relative failure of this particular variable, as distinguished from all others tested for the influence of impression management, may be related to the fact that the measure of faking did not have any effect on it, contrary to the large effects found on other variables. The faking measure is relatively specific and would have needed a component of conscientiousness, which it did not.

Discussion

The main findings of the study were:

- ! Even if the participants were all young and intellectually select students they varied considerably in EI and related constructs. The concepts were hence found to be relevant and applicable in a non-clinical setting, in spite of the clinical roots of some of the facets of EI, such as alexithymia.
- ! Support was obtained for the notion that EI is positively related to social adjustment in the group studied. This was true of adjustment in a very direct sense, such as loneliness, but also of indirect measures such as deviant values or deviant emotional responses.
- ! Of the two approaches to measuring EI, performance scales showed considerably more promise in several ways. The two most important performance measures showed strong convergence. They were unaffected by tactics of responding in a high-stakes selection context, while self-report scales, as expected, were found to be excessively distorted by such tactics.

¹². In passing, we note that self-deception also seems to be actively faked, like almost all other self-report measures in the present study.

- ! Faking was investigated and found to be abundant in the high-stakes selection context. However, extensive coverage of impression management and faking tendencies and separate measurement of such tendencies made it possible to exert statistical control over faking and remove virtually all of its effects.

Turning now to details, several measurement problems were addressed in the present study. The results support the notions that EI can be measured either by self-report or performance scales, and that these two approaches tend to give similar information. However, the self-report data were heavily contaminated by regular Five-Factor Model variance, which was not true of the performance measures. The correlation between one of the five factors and EI performance was restricted to Agreeableness, and it is reasonable that EI should be correlated with that factor, since EI contains social intelligence as one of its aspects. In addition, impression management and self-deception were more strongly related to the self-report measure than to the performance measures.

Another measurement problem is the scoring of performance measures. Both facial expressions and episodes were scored by means of consensus based scoring keys. For emotional knowledge we had access both to consensus and “expert” scoring, and the latter worked better. Possibly, episodes and facial expressions may be scored according to expert judgment in future work, but just who is an expert is not obvious. Differences among experts might be a problem as well. We also note that consensus scoring could be expected to approximate expert scoring since the mean judgments of a group tend to be close to expert assessment in many circumstances.

The present study is admittedly based on a small sample only, but we suggest that the results are quite strong. The debate on how to measure EI goes on, and we believe that results such as the present ones speak strongly in favor of performance measures. They were less affected by response styles and tactical answers, and also less correlated with the standard Big 5 dimensions of personality. This does not preclude that even self-report EI scales may measure variance beyond the Big 5, just that performance measures are much better in that respect.

The lack of agreement between self-report measures and performance measures of EI and facets of EI is somewhat disturbing, in spite of partial overlap. However, self-report measures were contaminated by response styles and reflected mostly the basic five-factor model dimensions of personality; hence they were probably coarse measures of EI even in the anonymous group. The findings on faking and relative lack of unique variance beyond the FFM speak clearly against using self-report measures as criterion measures of EI.

People who are high in EI will, according to the present results, be better adjusted socially - less lonely and less likely to develop Internet addiction, see also Engelberg and Sjöberg (Engelberg & Sjöberg, in press-c). They will also live a more balanced life and have a rich family life or leisure in addition to work and studies. The pattern of results that emerged in the present study thus supports the notion that social competence characteristic of high EI confers some actual advantage for adjustment. In line with these results, Furnham and Petrides reported recently a strong relationship between EI and happiness (Furnham & Petrides, 2003).

The pervasive use of consensus scoring in studies on EI actually presumes, as pointed out by

Roberts and colleagues (Roberts & Matthews, 2001), that a match between responses of an individual and the group as a whole indicates a better adaptation to the social environment. It is interesting to note that one of the few strong and replicable findings in Rorschach research concerns "good form", i.e. conventional answers. People who give many conventional answers tend to be better adjusted (Dawes, 1999). This type of finding not only provides some additional support for the consensus scoring of EI performance measures, it provides some input to the conceptual underpinnings of EI as a construct to encompass the ability for adaptation (Izard, 2001). It nevertheless remains unclear whether such ability stems from differences in cognitive intelligence, learned skills for processing information, or socio-cultural factors, see Zeidner, Matthews and Roberts (Zeidner, Matthews, & Roberts, 2001).

Deviance and unpredictability of emotional reactions were found to be negatively related to performance measures, as well as to social adjustment when measured in terms of work-family balance. Mood conformity thus seems to be related to social adjustment and this result is in some accordance with the proposal by Mayer and colleagues (Mayer, Salovey, Caruso, & Sitarenios, 2001) to include emotion management as part of emotional competence. It would however be more proper to consider such ability in terms of social competence or intelligence. The gathering of information about the mood prevailing in social contexts to adjust one's emotions accordingly is not an end in itself, but a means to adjust socially. In addition to the above-mentioned correlation between performance measures and the Agreeableness factor of the Big Five, these results may suggest that EI is ultimately about social adjustment.

The findings on value in the present study agree with our previous work (Engelberg & Sjöberg, 2003). High EI is associated with stressing such values as freedom and also achievement. Value deviance was found to be a positive indicator of Internet addiction; possibly further strengthening the argument that social intelligence is at the core of EI to facilitate adjustment to the social environment (Engelberg & Sjöberg, in press-a, in press-b). Value deviance has been found to be associated with low social adjustment (Schacter et al., 1954) and in recent work low EI in adolescents was found to be associated with adjustment difficulties beyond what could be predicted on the basis of traditional personality factors (Petrides, Frederickson, & Furnham, 2004). Further work on materialistic values in addition to the ones covered by the Schwartz scale would be interesting, as would work on environmental values.

The high correlation between value idiosyncrasies and Internet addiction calls for further research. Does surfing on the net bring in new value perspectives, or is surfing resorted to in the face of the social failures caused by individualistic thinking? It would be interesting to know also what purposes are fulfilled by surfing, since it can be socially dysfunctional (e.g. involving pornographic sites) or, in a way, functional and maybe work as a substitute, e.g. various forms of "chatting".

The practical measurement of EI, or indeed most personality dimensions, is particularly difficult when respondents are highly motivated to achieve a good result. This is certainly the case with the tests we have used in the admission procedure to the Stockholm School of Economics. The results obtained when comparing an anonymous group with a group tested under in a real high-stakes situation showed very large differences and very clear evidence of tactical responding. This may, however, not be as disastrous as it looks at first sight, provided

efficient statistical control is applied¹³. Faking and tactical answering was measured with four separate dimensions, one of them based on differences between explicitly faked and other responses. This is a type of measure, which showed much promise and could be further developed. The statistical control for tactical responses, which was made possible by our design, was very successful. Self-report scales might therefore be quite useful even in a situation where the test-takers are very highly motivated and give many tactical responses. This is, of course, under the assumption that they are not all equally tactical, but that seems to be a mild assumption. People always differ. Yet, many practitioners would probably prefer to avoid the psychometric niceties of measuring tactical behavior and go for performance measures which probably cannot be faked, no matter how much one tries. It is like faking intelligence. You cannot do it, or if you can, you are not faking¹⁴. Faking can have many and subtle effects on the construct validity of scores (Stark, Chernyshenko, Chan, Lee, & Drasgow, 2001).

We note that much research on personality and adjustment uses self-report scales to measure all dimensions. The occurrence of relationships may then be due to common response style variance, or can be explained by underlying Big 5 common variance. The present results with the performance measures cannot be due to such artefacts.

¹³. Previous experience with such control, using 3 och the 4 measures applied here, has shown that enormous differences may result in individual cases. This is in spite of a relatively high rank order correlation between raw and adjusted test results (Sjöberg, 2001b). The argument that impression management does not decrease test validity may be true, but the need for adjustment is still quite strong, not least on ethical grounds.

¹⁴. This reasoning disregards the security problems of testing which arise with the use of standard commercial tests. It is the experience of one of us (LS), on the basis of more than 10 years of experience in testing applicants to the SSE, that many people are quite creative when it comes to figuring out details about the tests being used, and “right” answers. That was a reason for customizing tests to this special group. In addition, popular commercial tests such as the Myers-Briggs have little speaking in favor of them in selection work and usually no validation research at all under Swedish circumstances (Sjöberg, 2000, 2001d).

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